

## ABSTRACT OF THE DISCLOSURE

An ad-hoc, peer-to-peer radio access system for cellular communications systems using time division duplex as a way of maximizing the bits/hz/km<sup>2</sup> for cellular systems. The network architecture of the ad-hoc system allows the radio access to be integrated with the fixed components of a conventional cellular system, PSTN or ISP. The objective is to make the system of the invention transparent to the features and services provided by the external network. The advantages of such a system to a cellular operator are that significantly less infrastructure is required, and that the RF spectrum is more efficiently utilized resulting in much lower building and operating costs. The system architecture is comprised of remote terminals, routers, gateways, and at least one gateway controller that interfaces the ad-hoc system to a cellular network system. The ad-hoc system of the invention allows for both voice and data transmissions and receptions.

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